NCE
NAVY CIVIL ENGINEER
WINTER-SPRING 2003 VOL. 40 NO. 1

*PPV Works*
Low Navy Investment, High Navy Family Value

*What a Blast*
Demolition and Other Fun at China Lake

RENOVATING THE

# NAVY'S FIRST HOSPITAL

## *Restoring the Fabric of History*

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*Cover photo by John E. Peters*

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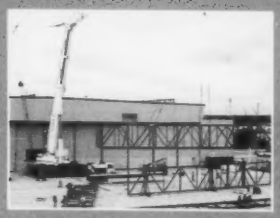

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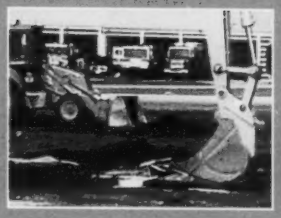

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## Subscriptions

Subscriptions to ***Navy Civil Engineer*** are available for $13 per year to FPO/APO/domestic US postal addresses and $16.25 to all other postal addresses from the Superintendent of Documents, Post Office Box 371954, Pittsburgh, Pennsylvania 15250-7954. Subscribe on the Internet by pointing your Web browser to http://bookstore.gpo.gov and then following the prompts, or telephone (202) 512.1800 and ask for the publications order desk.

## Postmaster

Please send postal address changes to the editorial and business office:
Naval Facilities Engineering Command
Attn: Editor, NCE (Code PA)
1322 Patterson Ave SE Ste 1000
Washington Navy Yard DC 20374-5065
Telephone: (202) 685.9126
DSN 325.9126
Fax: (202) 685.1484
DSN 685.1484

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## Authorization

The Secretary of the Navy has determined this publication is necessary in the transaction of business required by law of the Department of the Navy. Funds for printing this publication have been approved by the Navy Publications and Printing Committee. ***NCE*** is intended for the information of regular and reserve personnel of the U.S. Navy Civil Engineer Corps, civilian employees of NAVFAC, subordinate commands and other mission-oriented offices and activities.

SPEAKING FROM

# topside

Welcome to the all-new update of one of the longest-running service publications in the Navy. With this issue, your new *Navy Civil Engineer* magazine debuts a new look, a new outlook — and fresh energy for service in an all-new world.

With CEC officers, Seabees and many of our civilian corps at work on the war in Iraq or battling the threats of terrorism, 2003 already is shaping up as a time of significant challenge as well as opportunity.

Our challenges in Iraq and elsewhere in the world are many, but American and coalition forces are today literally making the world a safer place in which to live.

It was against this sobering backdrop that we recently celebrated the 2003 Washington-area Anniversary Ball. I was truly honored and pleased to host this celebration of the 161st birthday of the Naval Facilities Engineering Command, the 136th anniversary of the Civil Engineer Corps and the 61st anniversary of the Seabees. Our special guest speaker was the Vice Chief of Naval Operations, Adm. William J. Fallon.

My wife, Terry, and I were honored to have Adm. Fallon at our head table, where we were also joined by current Acting Secretary of the Navy, the Hon. H. T. Johnson. We were equally honored to share this special occasion with a large number of distinguished veterans and retirees, area Seabees, CEC officers and our civilian employees.

Our Command history is long and fascinating. NAVFAC began in 1842 as the Bureau of Yards and Docks, but today we do much more than build and maintain shipyards and Naval stations.

In our 161 years, Team NAVFAC has become the premier facilities authority among all the military services — with the effectiveness provided by speaking in and working with "One Facilities Engineer Voice."

We've taken the lead in adopting Web-based technology and advanced business practices, providing creative engineering and construction solutions, and keeping our commitments to all our DoD clients.

But most importantly, the Navy and Marine Corps Combat Team trust us to be their provider of choice when it comes to facilities engineering support. No other facilities engineering organization can match our accomplishments. We will continue to lead in technical innovation, facilities engineering, acquisition and construction, while enhancing Naval readiness ashore — and improving the quality of service for our military members, our civilian workforce and families into the 21st century.

Our talented team, comprised of dedicated Civil Engineer Corps officers (active and reserve), other military personnel, civilians and contractors work around the world pioneering engineering applications and leading the Seabees in peace and war.

Fifty years ago, in Korea, the Seabees went to war in a cold, harsh land. They led the way into battle — positioning pontoons for the landing at Inchon, the first major success of that war.

They went behind enemy lines and liberated some trains to get the supply lines moving. And they built the runways that gave us the air superiority necessary to win the war.

At the end of the Korean War, the Seabees could look back with pride in their accomplishments and that once again they proved they could do any job in any weather at any time.

As we celebrate in July the 50th anniversary of the end of that terrible war, the brave men and women of our Seabees, with their counterparts throughout the Department of Defense, are now working hard to build and preserve peace and defend freedom against tyrants and terrorist forces, and those who would harbor them.

We are once again reminded of our obligation to safeguard the legacy of our military, our Navy, our Civil Engineer Corps and our Seabees — a legacy of freedom, justice and liberty.

Right now as you read this column, our Seabees and Civil Engineer Corps officers are stationed and deployed around the globe. Some are at war, others offering aid and humanitarian assistance.

They are writing American history as they are deployed around the world with construction battalions both mobile and amphibious; Underwater Construction Teams; and at State Departments.

One and all, you are doing wonderful work! I could go on and on about the many marvelous accomplishments of Team NAVFAC, the Civil Engineer Corps and the Seabees. But in this forum, at least, I know I'm preaching to the choir, and I'll have plenty of opportunity for kudos in future issues of *NCE*.

For now, though, we've got some work to do.

Michael R. Johnson
Rear Admiral, CEC, USN
Chief of Civil Engineers
Commander, Naval Facilities Engineering Command


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NAVY CIVIL ENGINEER



**Michael R. Johnson**
Rear Admiral, CEC, USN
COMMANDER
Naval Facilities Engineering Command
and Chief of Civil Engineers

**Robert L. Phillips**
Rear Admiral, CEC, USN
VICE COMMANDER
Naval Facilities Engineering Command
and Assistant Chief of Civil Engineers

**Sean P. Kelly**
Lieutenant Commander, USN
PUBLIC AFFAIRS OFFICER
Naval Facilities Engineering Command Public Affairs

**Daniel Charles Ross**
Chief Journalist, USNR (Active)
EDITOR IN CHIEF
Naval Facilities Engineering Command Public Affairs

CONTRIBUTORS
John E. Peters
Paul R. Amato, P.E., Peter Beaudry, Mike Bellamy, P.E., Dee Chandler
Todd Czarnecki, Susan Grant, Nicole Hawley, Pam Lama, Steven McCombs
Bill Manley, Larry Nuzum, Daryl Smith, Leslie Spaulding
Connie Nowlan Taylor, Tom Warring
LCDR Meg Reed, ENS David Golden, ENS Shannon Richardson
EOSC(SCW) Art Messer, EOC(SCW) Timothy "DZ" Dziergas
JOC Lorraine Elliott, EOC(SCW) Tom Kuntz
JO1 Brigette Barnes, EO1(SCW) Phil Cuzzetto
JO2(SW) Christina Asencio, JO2 Traci Feibel
PH2 Jacob A. Johnson, PH2 Frederick McCahan



EDITORIAL

***Navy Civil Engineer*** (NCE) is published three times per year from the Naval Facilities Engineering Command public affairs office, located on the historic Washington Navy Yard, "the Quarterdeck of the Navy." Letters and e-mail are welcome on all Navy civil engineering topics and, if published, are subject to editing for length and clarity. Editorial submissions that show active duty and reserve CEC officers, engineers and others depicted safely are strongly encouraged. We prefer to receive written and photographic submissions by electronic mail to **nce@navfac.navy.mil.** Film or digital images should include captions, be unmodified, and digital files should measure at least 300 dpi at 5x7 inches. All submissions must include the author's full name, rank/rate, postal address, duty contact telephone number and e-mail address. Send all postal mail to the magazine:

Naval Facilities Engineering Command
Attn: Editor, ***NCE*** (Code PA)
1322 Patterson Avenue SE Suite 1000
Washington Navy Yard DC 20374-5065



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CONTACTS
E-mail: nce@navfac.navy.mil
Voice: (202) 685-9126 or DSN 325-9126
Fax: (202) 685-1484 or DSN 325-1484


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***NCE* is the publication of the United States Navy Civil Engineer Corps, active duty and reserve, celebrating 136 years of proud service.**

RADM Johnson presented the NAVFAC Engineers of the Year awards during a ceremony at headquarters. At far left, Cmdr. David B. Cortinas and his wife, Annette B. Cortinas, accept the Military award. Near left, the Civilian Engineer of the Year was awarded to a smiling Richard T. Mathews, accompanied by his wife, Brenda Holt Mathews.

## *RADM Johnson Awards NAVFAC Military and Civilian Engineers of the Year*

Rear Adm. Michael R. Johnson, Chief of Civil Engineers and Commander, Naval Facilities Engineering Command (NAVFAC), announced the selection of the 2003 NAVFAC Military Engineer of the Year and the Military Engineer of the Year.

An award ceremony was held Feb. 20 at NAVFAC headquarters on the Washington Navy Yard.

"I am pleased to announce that Richard T. Mathews from ROICC Portsmouth was selected as the Civilian Engineer of the Year and Cmdr. David B. Cortinas, CEC, USN, from LANTDIV, was selected as the Military Engineer of the Year," RADM Johnson's congratulatory message said in part.

Mathews is a Registered Engineer in the Commonwealth of Virginia. His engineering solutions to complex and often one-of-a-kind construction problems highlight his career. Key among his accomplishments is his solving numerous problems and leading a $52 million contract to modernize the waterfront at the Norfolk Naval Shipyard — at a time when keeping the nuclear shipyard fully operational was a construction challenge.

Cortinas is a Registered Engineer in the State of California. He served as public works officer (PWO) for Norfolk Naval Shipyard and Caribbean operations officer (COO) for NAVFAC LANTDIV.

As PWO in Norfolk, he masterfully executed $62 million of facilities maintenance, repair and minor construction that resulted in a 55 percent reduction in critical maintenance backlog. Additionally, he coordinated $49 million worth of essential and complex construction projects.

As COO, he led efforts to plan, design and construct a 320-cell expeditionary detention facility for Taliban and al Qaeda detainees in Guantanamo Bay, Cuba.

Both engineers have exemplary and highly distinguished careers incapable of being encapsulated here.

These brief examples of their superior work mark them as worthy recipients of their awards and outstanding members of the engineering profession.

In other award news, RADM Johnson announced the selection of LT Miguel Dieguez, CEC, USN, to receive the Sverdrup Medal for 2002.

This award is given annually by the Society of American Military Engineers (SAME) to an active duty officer, 36 years or under, in recognition of outstanding engineering contribution to SAME, the military service, or the Nation.

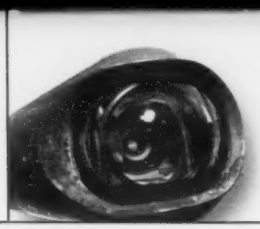
As EFA Chesapeake AROICC Annapolis, LT Dieguez drove the execution of the Bancroft Hall renovation projects at the United States Naval Academy. Thanks to LT Dieguez, this complex, multi-year $250 million renovation project was on track for completion in May 2003.

## *NMCB 4's Baldwin receives 2002 Moreell Medal*

LCDR Joel Baldwin received the 2002 Moreell Medal for performing superbly as the operations officer of NMCB 4 and executive officer of a 325-person Naval Construction Task Group (NCTG) deployed to the Philippines in support of *Operation Enduring Freedom*.

Baldwin demonstrated extraordinary leadership and ceaseless energy while preparing the battalion's air detachment for the mission. Upon arrival, he assumed the leadership role to improve mobility for construction operations. He worked closely with local community leaders to complete over 40 miles of road improvements, enabling a quick response to terrorist activities.

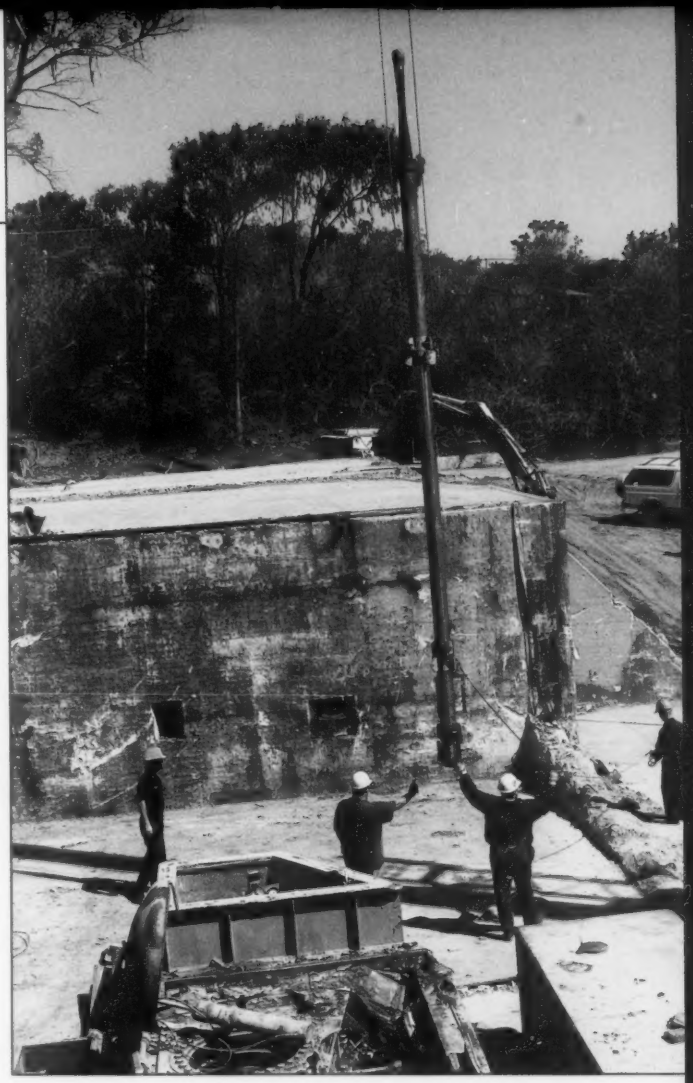
He negotiated with the Philippine officials to allow clearing and restoring of a 1940s-era airstrip for direct re-supply flights. Operating in a hostile area with U.S. Marines engaging in firefights, he led Seabees to restore the 3600-ft airstrip in only 14 days. Additionally, the NCTG built camp facilities for the Marines and Army Special Forces.



# Up periscope!

## *NAVFAC Southwest Division keeps an eye on history*

STORY BY BILL MANLEY
PHOTOGRAPHS BY PH2 FREDERICK McCAHAN



At about 10:30 a.m. on Sept. 12, 2002, the U.S. Navy retrieved a World War II-era German periscope from a pit 50 feet beneath the floor of the former Arctic Submarine Laboratory on Point Loma, Calif., and prepared it for cross-country shipment to the Museum of Science and Industry (MSI) in Chicago.

It was the culmination of efforts by NAVFAC Southwest Division personnel over 18 months to preserve the scope, which functioned as laboratory equipment in the Navy's Arctic Submarine Laboratory (ASL) from the 1950s until the building closed in 1992.

The significance of the periscope in the lab came to be recognized by the Navy's Cultural Resources Program during preparations to demolish the lab building. The Navy immediately initiated efforts to preserve the periscope and return it to the sub, which has been a display at MSI for many years. The ASL was itself recognized as a historic site eligible for the National Register of Historic Places for its exceptionally significant role in the history of the Cold War.

There are two primary reasons why the periscope came to be used in the lab. First, when the war ended, the U.S. actively sought out a wide range of captured assets, both for investigation and reuse. The second is that lab staff were masters at salvaging and reusing materials and equipment to build and operate the lab.

The U-505 is a German World War II Type-IXc, built in Hamburg Germany in 1941. It was captured in battle on the high seas by boarding parties from the *USS Guadalcanal* (AVC 60) task group 22.3 on June 4, 1944.

There is evidence supporting a conclusion that the periscope originally was on the U-505, an *Unterseeboot* of historic significance as the only German submarine captured at sea by U.S. forces during WWII. After the war, when the Navy had exhausted the sub's research potential and removed reusable equipment, plans were made to use the U-505 for target practice. The periscope was appropriated for reuse in the ASL.

The sub wasn't destroyed, though, and it sits on the east side of the MSI not only as an exhibit, but as a memorial to more than 55,000 American Sailors and merchant mariners who lost their lives at sea in two world wars. In 1989 the U-505 was designated a National Historic Landmark.

Since 1954 more than 23 million visitors have toured the U-505. The museum is constructing a new building to enclose the U-505 and new interpretive displays, including the periscope.

The Navy is proud to preserve this significant piece of history. Its interpretation within the Museum of Science and Industry will add unique insights into little-known but important elements of 20th century American history. In doing so, we honor Dr. Waldo Lyon and his staff, whose dedication and commitment to research and development in Arctic Submarine Laboratory made, and continue making today, major contributions to the safety and security of the nation.

**For more information:**

> www.fransorb.com/cve60.htm
> www.msichicago.org/exhibit/U505/U505home.html

# update

## *Shocking electrical savings are flowing at NAB San Diego*

Utilities management is key to the Navy's ability to save money. Through innovative contracts and smart energy savings measures, Navy Region Southwest weathered the daunting California power crisis without interruptions of service or paying stratospheric prices. In the past two years, personnel from PWC San Diego have won two prestigious Federal Energy and Water Management Awards.

In FY02, NAVFAC awarded $169 million in energy projects that provide annual savings of $23.5 million, 1,099,615 mBTUs in energy and save 241 million gallons of water.

In October 2002, Navy Region Southwest deployed the largest federal solar photovoltaic power generation system in the nation. The 750 kW array was developed as part of an Energy Savings Performance Contract (ESPC) project at Naval Base Coronado in San Diego.

The installation is comprised of two contiguous solar arrays covering a half-mile-long carport parking structure for Navy personnel.

In addition to providing shelter for parked cars, the system produces electricity during most days equivalent to that used by 950 homes.

The estimates suggest the array will generate as much as 1,244,000 kWh per year, and save an estimated $228,000 in annual operating costs by avoiding purchases of expensive peak electricity.

Another example of forward thinking is the Portsmouth Naval Shipyard Regional ESPC. On Aug. 30, 1999, the Energy Service Company (ESCO) invested $10.9 million to install a five-megawatt combustion turbine co-generation system providing year-round electricity and steam generation, and also to make improvements in the shipyard's heat distribution systems.

ROICC Portsmouth coordinated the contract and provided key construction oversight.

On June 28, 2002, a second task order was signed in which the ESCO will invest an additional $32 million in upgrades at the shipyard.

This ESPC project offers some important efficiencies:

1. Modernize the existing central power/steam plant, raise its overall efficiency and streamline plant operations

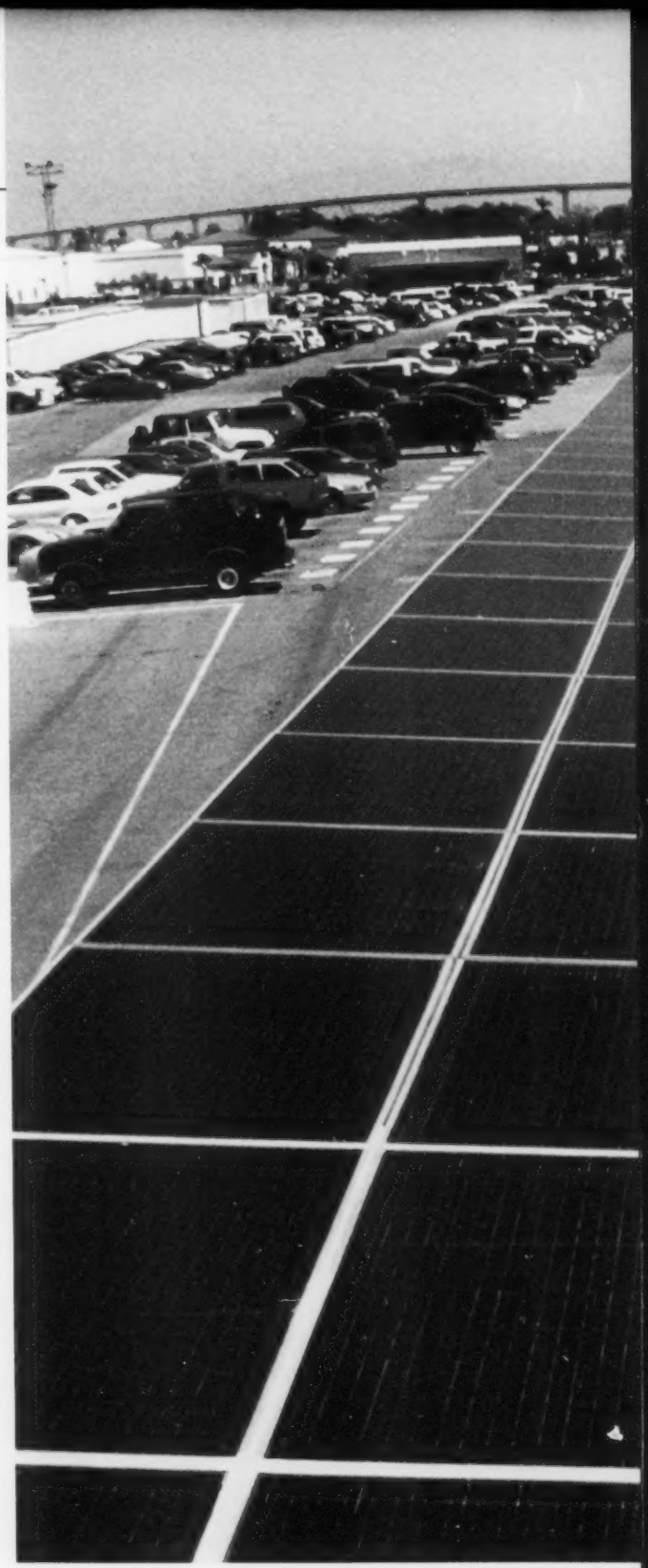
2. Eliminate redundancy in thermal energy distribution systems

3. Provide needed improvements and increased reliability to power systems

4. Eliminate in excess of $19 million in future required repair and replacement projects for old systems

5. Provide annual preventative maintenance to new systems in order to maintain equipment performance and long-term persistence of savings.

The project is an effective NAVFAC Design-Build project. It comprises a major upgrade of the power plant and its capacity — and results in an annual savings estimated at a healthy $5.3 million.



# update

***Seabees assist maritime crew with drifting whale***

The normal calm of Naval Amphibious Base (NAB) Little Creek's beach line was interrupted when Seabees from Construction Battalion Unit (CBU) 423 brought a 36-foot *Sei* whale ashore, found dead by Coast Guard officials floating near Craney Island in the Elizabeth River.

Bulldozers were used to dig a grave for the large mammal, its final resting place after being held at Naval Station Norfolk the night before. They also set the stage for members of the Virginia Marine Science Museum's Stranding Team to perform a necropsy to determine the whale's cause of death.

"We hooked a towline to one of our D-7 bulldozers and essentially dragged the whale onto the beach," said Chief Steelworker (SCW) Scott Hill, Alpha Company chief for CBU 423. "The evolution couldn't have gone any smoother — it went off without a hitch."

An examination determined that the whale died after being struck by the bow of a ship, possibly as long as a week before it was found. There was no way of knowing whether the ship was military or civilian, but it was indeed a large vessel.

"We came to the Navy for help in this, and they definitely came through," said Sue Barco, who led the team performing the necropsy. "This species is usually found in the open ocean. The whale could have been carried by the ship into the harbor, then dropped off after the ship slowed. The examination is consistent with a ship strike while the animal was alive."

The Navy has long been known to assist the civilian and maritime communities in various search, rescue and salvage operations — but whale carcass removal?

"Not since I've been here, but I know that NAB has assisted with dolphins and other water mammals who drift into the harbor," said Hill. "It just goes to show you that we're up for just about any task put before us."

The whale's actual time of death and physical causes will ultimately be determined after several days of tissue and blood analysis.

***CEC officer's school team wins with 'Future City'***

Since the beginning of the 2002-2003 school year, USSTRATCOM's LCDR Freddie L. Bazen Jr., CEC, had been mentoring a team from Mission Middle School, Bellevue, Neb., in the 2003 National Engineers Week Future City Competition. Their hard work paid off when, with more than 30,000 students competing from more than 1,000 schools nationwide, Bazen's team won first place in the national competition.

Their winning "Candeo Glacia" city plan offered unlimited opportunity, high-quality living and innovative technology. Industrial activity centered on clean and inexpensive hydrogen power production. The name Candeo Glacia means "glowing ice," referring to a proposal that hydrogen fuel would be extracted from underwater methane deposits.

The Future City Competition is a national program sponsored by the engineering community to promote technological literacy and engineering to middle school students. The program fosters an interest in math, science and engineering through hands-on, real-world applications. Competitive teams are comprised of a three-student squad, a teacher sponsor and an engineer mentor.

To find out more about how you can get involved in this outstanding program, interested Civil Engineer Corps officers should contact their local middle school, engineering society, or the national coordinator, Carol Rieg at (301) 977-6582. Or, visit the Future City Web page at www.futurecity.org.

# *Seabees Deploy to Arabian Gulf*

Seabees are deployed to the Arabian Gulf region in support of *Operations Enduring Freedom* and *Iraqi Freedom*.

As buildup in the region continues, hundreds of additional Seabees are expected to continue flowing forward to the Gulf region, according to First Naval Construction Division (1NCD) public affairs officer Daryl Smith.

Based in Norfolk, Va., 1NCD is the new Seabee central command established in August 2002.

"Historically, Seabees have been at the tip of the spear in every major U.S. military operation since World War II," Smith said. "When large numbers of U.S. forces deploy, they need infrastructure to be built, such as roads, bridges, airstrips and camps."

Naval Mobile Construction Battalion (NMCB) 4 and Naval Construction Force Support Unit 2, Port Hueneme, Calif., along with NMCB-133, Gulfport, Miss., have received orders to deploy to the Arabian Gulf area. In addition, more Seabees from Construction Battalion Maintenance Unit 303, based in San Diego, received deployment orders to augment members of their unit already in the region.

Seabees from NMCB 133 were among the first sent to Afghanistan last year to repair airfields and roads for use by American forces in the region.

"The Seabees' orders are to support our government's war against terrorism and prepare for any future contingencies," said Linda Wadley, spokesperson for Naval Construction Battalion Center, Port Hueneme, Calif.

Seabees from NMCB 5 redeployed to the area from Rota, Spain, in September 2002. Some Seabees from NMCB 74 redeployed to the Middle East from Guam in October. Another Seabee battalion is already on routine deployment in Okinawa, Japan.

Seabees are famous for their expertise in construction of bases, airfields and more, especially under harsh or hostile conditions. As current events develop in the Arabian Gulf, Seabee units were among thousands of "first responders" working in several Mideast locations.

"Seabees possess a wide range of construction and defensive capabilities that make them an essential part of most large-scale military efforts," Smith said. "Providing construction support to U.S. forces during contingency operations is the reason Seabees exist. They're eager to put their training and experience into action protecting America and its allies."

"Our Seabees are a force to be reckoned with on two fronts," said Master Chief Petty Officer of the Seabees Harrell T. Richardson. "Our motto is 'We build, we fight,' and that's why Seabees are needed in the early stages of a conflict. When push comes to shove, Seabees can build an airfield and, when necessary, defend it."

Engaged in the earliest tasks in the region, elements of NMCB 74 recently placed concrete for an Air Force C-130 Hercules cargo aircraft staging area — the largest single-battalion concrete project since World War II. The project was being conducted in an undisclosed location.

The Naval Construction Force (NCF) provides essential combat construction services to a Marine Air-Ground Task Force (MAGTF). In the Arabian Gulf, the NCF element of the MAGTF has evolved into the First Marine Expeditionary Force Engineer Group — the "MEG." The MEG is made up of light, fully integrated regimental task forces that can be sized and shaped for specific missions, responding with great agility on the modern high-speed battlefield.

The MEG's joint-service elements are useful in forward-deployed operational planning teams. Given today's sophisticated communications, MEG Seabee planners in the Gulf can interface directly with counterparts assigned to 1NCD command operations centers in Little Creek, Va., and Pearl Harbor, Hawaii — and beyond. NAVFAC's Atlantic and Pacific Divisions are only a phone call or a few key clicks away, providing unique engineering expertise in real-time response to tactical needs anywhere on earth.

# update

***Christilaw named Marvin Shields winner for 2002***

RADM Johnson announced that The Society of American Military Engineers (SAME) has selected Builder 1st Class (SCW) Nicholas E. Christilaw, USN, as the recipient of the prestigious 2002 Marvin Shields Award. SAME annually recognizes a Seabee who has made exceptional contributions to military construction, facilities maintenance, training, or readiness.

BU1 Christilaw's distinguished himself while assigned to Naval Mobile Construction Battalion (NMCB) 3 as project supervisor for the 22nd Naval Construction Regiment in Guantanamo Bay, Cuba, serving as air det operations chief and detail OIC.

Assigned to Joint Task Force 160 in support of *Operation Enduring Freedom*, Christilaw aggressively led a platoon of Seabees and Marines to construct 320 al-Qaeda detention cells at Camp X-Ray, as well as 85 SEAhuts for over 1,000 security force and fleet hospital support personnel. Because of his thorough knowledge of the mission and polished communication skills, he was hand-selected to brief the detainee cell construction in Spanish on CNN Worldwide. Seizing CPO duties as air det operations chief for the battalion's two-week field exercise at Fort Hunter-Liggett, Calif., he motivated his detail to complete construction of six complex projects without a single mishap, despite "black flag" heat conditions. While deployed to Okinawa, he was picked to fill the CPO billet as detail OIC, supervising a 16-person crew working on three remote, high-visibility, and technically challenging projects at the jungle warfare training center.

"Petty officer Christilaw's professional achievements and dynamic leadership-by-example style mark him as an invaluable asset to the Seabees and the United States Navy," RADM Johnson said in his congratulatory message. "He constantly demonstrates exceptional technical skills, meticulous attention to detail and a motivated 'Can do!' attitude. He is most deserving of this prestigious award. Well done, Seabee!"

***An alternate view of energy engineering***

Here's a rundown of information for the next lull in party conversation:

One NHRA Top Fuel dragster's 500-cu in Hemi V-8 engine makes more horsepower than the first eight rows at NASCAR's Daytona 500.

Under full throttle, a dragster engine consumes 1.5 gallons of nitromethane fuel per second – the same rate of consumption as a fully loaded Boeing 747-200 but with four times the energy volume.

A stock Hemi V-8 for street use will not produce enough power to drive the Top Fuel dragster's supercharger.

Even with nearly 3000 cfm of air being rammed in by the supercharger on overdrive, the fuel mixture is compressed into nearly solid form before ignition. Cylinders run on the verge of hydraulic lock.

Dual magnetos apply 44 amps to each spark plug. This is the output of an arc welder in each cylinder.

At the stoichiometric 1.7:1 air/fuel mixture for nitro, the flame front measures 7,050 degrees Fahrenheit.

Nitromethane burns yellow. The spectacular white flame seen above the dragster's exhaust stacks in night racing actually is raw burning hydrogen, dissociated from atmospheric water vapor by the searing exhaust gases.

Spark plug electrodes are totally consumed during a pass down the drag strip's brief 1,320 ft. At about halfway, the engine is dieseling from compression and the glow of exhaust valves at 1,400 degrees F. The engine can only be shut down by interrupting the fuel flow.

If the spark momentarily fails early in the run, unburned nitro builds up in those cylinders and then explodes with a force that can blow cylinder heads off the block in pieces or split the block in half.

To exceed 300 mph in 4.5 sec, dragsters must accelerate at an average of more than 4 g. But in reaching 200 mph well before mid-track, launch acceleration is closer to 8 g.

If all the equipment is paid off, the crew works for free, and for once nothing blows up, each run costs about $1000 per second.

A Top Fuel dragster reaches over 300 mph before you have completed reading this sentence.

***Korean War vets to be honored in Washington***

On July 27, 1953, the United States and 21 other United Nations members signed the armistice to end the Korean War. After returning home, many servicemembers never talked about their experiences.

America will honor these heroes during the "National Salute to Korean War Veterans" July 25-27 in Washington, D.C., with a star-studded event at the MCI Center, a ceremony at the Tomb of the Unknowns in Arlington National Cemetery and a wreath-laying and memorial ceremony at the Korean War Veterans Memorial on the National Mall.

The event at the MCI Center is planned to include musical performances by

military bands and nationally-recognized artists, guest speakers and a parade of unit colors from all five branches of the U.S. military.

Representatives from the 21 other nations that participated under the United Nations Command during the war are expected to also participate in the parade.

This parade of colors will mark the first time all the colors of the major units from the Korean War have been brought together.

"The support the people of this country have provided us to thank and honor Korean War veterans has been tremendous," said retired Air Force Maj. Gen. Nels Running, executive director of the DoD 50th Anniversary of the Korean War Commemoration Committee.

"This three-day event in Washington, D.C.," Running said, "will be a great opportunity for the nation to take the time to recognize the 1.8 million Korean War veterans who stopped communist aggression in its tracks and preserved the freedom of the Republic of South Korea."

For more information about the Korean War or any of the upcoming events, call the DoD 50th Anniversary of the Korean War Commemoration Committee toll-free at 1-866-KOREA50 or visit the official Web site at www.korea50.mil.

***NAVFAC teammates win joint-service DSPO award***

A contract developed jointly by Army, Navy and Air Force engineers received one of five team awards from the Defense Standardization Program Office (DSPO) for outstanding contributions to the DoD last fiscal year.

The March 4 DSPO ceremony in Washington, D.C. recognized individuals and organizations achieving significant improvements in quality, reliability, readiness, cost reduction and interoperability through standardization.

R. David Curfman and Richard Paradis, NAVFAC Engineering Innovation and Criteria Office, and Maria Swift, NAVFAC Atlantic Division Facilities Support Contracts Branch, both in Norfolk, Va., were award recipients for the Navy. Their team jointly developed a contract to give service architects and engineers Internet access to non-government standards referenced in military criteria, standards and specifications for facilities planning, design, construction, operation and maintenance.

"Legislation directed federal agencies to use commercial standards rather than government-unique standards when procuring products, systems and facilities to the maximum extent practicable," Curfman explained. "The services had traditionally relied on government-produced facilities criteria and standards and procured non-government standards through individual contracts. These redundant contracts wasted valuable resources and inhibited uniform application of the standards."

Engineers and architects at 66 locations within USACE, NAVFAC and USAF now have access to most of the non-government standards they need for facilities planning, design, construction, operation and maintenance from the convenience of their desktop computer.

"We expect to see reduced construction, acquisition and engineering costs in the military construction process," Curfman added.

***You want some pine fragrance with that?***

A new vehicle wash platform at Twentynine Palms, Calif, is keeping Marine Corps armored vehicles spotless. The project, valued at $2,739,265, is capable of fast throughput and is expected to reduce the turn-in and washing process for combined arms exercises by 20 percent.

Design features include a staging area that was incorporated to allow vehicles the ability to stack in queue without obstructing traffic, with a lighting system designed for nightly operations that would not adversely impact the surrounding areas. All fixtures have high energy efficiency and low power consumption.

Six elevated concrete washstands were included in the design to allow vehicle undercarriages to be thoroughly washed with ease of operation and maintenance. It includes lights for the vehicle undercarriage without creating glare to the driver.

***Bird, Lyskin awarded both DACM prizes for DAWIA***

For the first time, the Navy Director for Acquisition Career Management (DACM) held presented four Awards for Outstanding Service, two for major SYSCOMS and 2 for smaller SYSCOMS. NAVFAC received *both* of the awards in the major SYSCOMS category.

While this reflects great credit on NAVFAC and its quality workplace environment, the awards were presented directly to the two employees who accomplished most of the work. The recipients were Ms. Joy Bird, from Community Management at HQ, for outstanding work in Command participation of continuous learning, and Ms. Lana Lyskin from the Naval Facilities Institute (CM-West, Port Hueneme)for maintaining the best execution record for continuous learning courses.

NCE COVER STORY

# RENOVATING NAVY HOSPITAL PORTSMOUTH

STORY & PHOTOGRAPHS BY JOHN E PETERS

It was a daunting challenge: Renovate a 170-year old historic building, the Navy's first hospital, into a modern administrative facility while preserving the historical nature of the original structure.

The original work on Bldg. 1 at Naval Medical Center Portsmouth, Va., began on April 2, 1827. This ancestral structure remained in use as a medical facility even after a new high-rise hospital was built in 1960, up until April 1999, when a new hospital opened.

John Haviland, a prominent Philadelphia architect, designed it in the Greek Revival style. The original building is "U" shaped, four stories tall, with an impressive Doric portico above a raised basement, today's first floor.

In 1907, the Washington, D.C. architectural firm of Wood, Donn, and Deming designed the first major renovations and additions to the Naval Hospital, consisting of new wings on each side of the original building. Extensive interior alterations included fireproof floors and walls, and "modern" heating and lighting systems, the first elevators and a fifth-floor operating suite with a domed roof. This construction spanned a period of 1907 through 1910 and was completed by the George A. Fuller Construction Company.

In 1941, the "outside" wings, designed by Richmond, Va., architect Merrill C. Lee, were added to the rear of the 1907 wings. The four-story open balconies on each side of the 1827 wings were removed in 1951 and were replaced by reinforced concrete porch enclosures.

Because Bldg. 1 is a historic structure, significant preparatory work had to be done before the renovation could begin. Section 106 of the National Historic Preservation Act requires federal agencies to consult with the Advisory Council on Historic Preservation (ACHP), an independent federal agency, and the State Historic Preservation Officer (SHPO) to avoid, minimize, or mitigate undertakings that may affect historic properties. Consultation was initiated in the late 1980s to resolve the effects of the Replacement Hospital Project on historic resources at the Portsmouth site.

Then president of Newbill and Beale, Inc. Architects, LANTDIV Historical Architect Mike Newbill served as the project's principal historical architectural consultant, the architect of record for the acute care facility and provided services to implement several stipulations of the MOA. He subsequently served as principal architectural consultant to Shriver and Holland, Architects, for the design of the Bldg. 1 rehabilitation project and was primarily involved with the stabilization of the front facade of the 1827 portion of the structure and the exterior painting of the 1907 wings. In 1996, he recused himself from further involvement with the medical center redevelopment after joining LANTDIV.

The effort initially began under the management of OICC Naval Hospital, established in 1989 to manage the 10-year redevelopment. The OICC was disestablished in April 2000, and the Bldg. 1 renovation continued under the management of ROICC Portsmouth. The $18 million

renovation that took the hospital building down to the original walls was begun in August 1999 and completed in October 2002.

The project was awarded to Snap Contracting Corp., a local small-business contractor. Joe Callahan was the project engineer and Richard Taylor was the construction representative for ROICC Portsmouth.

"For a small contractor, they have exceeded my wildest dreams with how they finished this job," said Callahan. "This was true partnering between Snap and the Navy," he added. "Company president John Saafi and project manager Dick Welch were intimately involved from start to finish and took great pride in this job."

The renovation is one of the final phases of the medical center's $400 million transformation begun in 1990, adding a million square feet of sorely needed medical treatment space in a new acute care facility. Other phases added a parking structure, expanded the central energy plant, relocated facilities, and upgraded utilities and surrounding roads.

The comprehensive interior and exterior project converts the former four-story hospital into administrative space for the commanding officer and staff, adds a medical library and patient records holding area. The design includes renovation of original architecture (exterior sandstone, wood trim and staircases); significant asbestos and lead abatement; significant structural upgrades and addition of HVAC systems. The 1941 wings were removed and a pedestrian bridge connecting Bldg. 1 and the new Charette Health Care Center was added.

Perhaps not surprisingly, the program took a little longer than expected. The contract originally awarded for $12.2 million is now valued at $18.5 million, Callahan explained, "because we had $6 million in changes."

Because of the nature of the unforeseen conditions and structural problems, some pre-planned work phasing couldn't be done in sequence. Complicating factors were the lack of as-built drawings for a large portion of the structure — and a surprising number of undocumented mutations and other odd mods done to it over 170 years of use and upgrades.

Unforeseen conditions discovered once the renovation began included additional asbestos and lead abatement; structural problems where load-bearing walls had been breached; abandoned underground utility tunnels and obsolete underground facility foundations. Many windows were in worse condition than anticipated and had to be rebuilt rather than repaired. Piping, ductwork and conduit conflicts above ceilings had to be resolved, along with roof problems that included termite damage.

The list goes on. The 1910 renovation had used terracotta tiles in the ceilings for fireproofing — now a non-starter for that purpose, of course. Several previously unknown fireplaces were discovered during the renovation, along with one room that had apparently been involved in a fire. The

## The rules:

A Memorandum of Agreement stipulated that DoD, Naval Hospital and LANTDIV would adhere to a number of strictures:

1) Ensure renovations to Bldg. 1 would be compatible with the historic and architectural character of the Portsmouth Naval Hospital Historic District
2) Ensure renovations be consistent with recommended approaches set forth in the Secretary of the Interior's "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings"
3) Submit the rehabilitation plans and specifications for Bldg. 1 to the Virginia SHPO
4) Determine the feasibility of renovating the exterior of Bldg. 1 (primarily the 1827-era rear wings) to recreate their historic appearance
5) Develop a cyclical maintenance plan in consultation with Virginia SHPO and ensure its implementation
6) Record Bldg. 1 in accordance with Historic American Building Survey (HABS) documentation standards.

**Naval Medical Center**, Portsmouth, Va., is the oldest operating hospital in the U.S. Navy. Architect John Haviland, of Philadelphia, designed and supervised construction of the original hospital, the Navy's first. Work began on April 2, 1827, and a portion of the building was occupied in July 1830.

The hospital has been a witness to history more than once. During the Yellow Fever epidemic of 1855, it also served civilians from nearby towns, treating 600 cases of the disease. On April 17, 1861, the Virginia State Convention voted to secede from the Union — and only three days later, the Third Virginia Regiment occupied the hospital and renamed it Fort Nelson. Wounded from the naval battle between the ironclads *USS Monitor* and *CSS Virginia* were treated there. In May 1862, the hospital was retaken by the Union Army and was eventually returned to the U.S. Navy.

To accommodate the ever-increasing demands, Congress authorized funding for a new hospital in 1952, with the design for the building starting in 1955. Construction began in 1956 and a new hospital building with a capacity of 778 beds was competed in 1960 at a cost of $15 million.

In 1988, a comprehensive study of the long-range military health care needs in Hampton Roads recommended a new hospital as the solution to many deficiencies with the existing installation. The study evaluated seven options, ranging from building a completely new hospital to contracting all medical care to the private sector.

The decision to build a new facility was based on several factors. The Navy would spend about $40 million less each year to provide health care in an upgraded hospital than it would to rely solely on the private sector. Second, physical limitations and layout of the existing high-rise building, which was designed to provide inpatient care, could not be overcome through renovation to be compatible with the modern emphasis on outpatient care. Third, construction of a new facility would be least disruptive to maintaining current hospital services.

The new hospital design creates a modern health care facility but doesn't overshadow Bldg. 1, the historic original hospital. The $400 million redevelopment project, begun in 1990, adds one million square feet of medical treatment space in a new acute care facility. The new facility includes sophisticated modern equipment and technologies, including hyperbaric chambers, magnetic resonance imaging and a linear accelerator. The full spectrum of inpatient and outpatient care offers 40 medical specialties.

During the hospital's redevelopment, 39 buildings were demolished and were replaced by various new facilities, including a parking garage, public works building, gymnasium and a central energy plant. Ninety percent of the site's utilities were replaced. The $167 million Charette Health Care Center acute care facility was completed Oct. 31, 1998, and opened in April 1999.

Bldg. 1 and portions of Bldg. 215 will be renovated to provide logistical support and improved administrative functions. Bldg. 1 was complete in 2002 and Bldg. 215 will be completed this year. — *JEP*

damage had been covered up, but not been repaired.

The primary historic and architectural integrity feature retained from the original 1827 structure is the impressive formal façade constructed of Aquia Creek sandstone, the same material used for The White House and the U.S. Capitol. Architectural conservators determined that the stone had originally been painted, although there was very little visual evidence of this when project planning commenced. Historical paint specialists identified the original colors employed in the stabilization.

The stone and its mortar joints exhibited various levels of decay. A conservation treatment was selected to repair the deteriorated stone with special stone patching mortars matching the physical properties of the Aquia Stone. A finish of breathable masonry coatings was carefully applied, designed to protect from the elements but not trap moisture within the wall assemblies.

The goal of preserving legacy while serving future medical needs was a tricky one to meet.

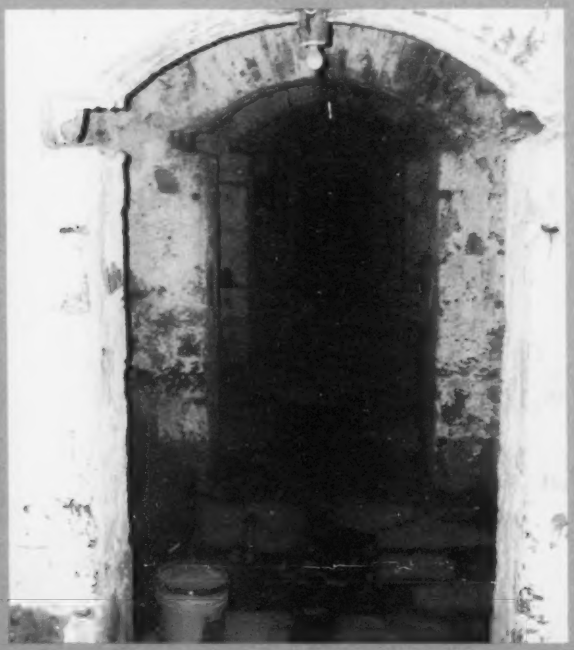
"The historic and architectural integrity of the interior spaces is limited," Mike Newbill admitted. "Although the general organization of the Haviland plan is still evident and the basement storage area below the front steps, called the dungeon, remains largely intact, extensive changes have occurred over time throughout the building." Many modifications, of course, had occurred well before the modern realization of rules governing changes made today and in the future.

In the last phase of the medical center's redevelopment, Bldg. 215, the 18-floor high-rise hospital, is being refreshed for administrative and medical support space. A $45 million contract was awarded to J.A. Jones in March 2000, with project completion expected this calendar year.

According to Newbill, some important Bldg. 1 features that survived from the 1907-1910 period have achieved significance in their own right. The marble entrance vestibule, central foyer and main stairway, and several fireplaces are only a few such highlights.

The contemporary rehabilitation project has respected and retained those features. In other areas, structural and mechanical alterations between 1910 and the 1990s – and a lack of governing regulations over much of that time — resulted in some loss of historic original design integrity.

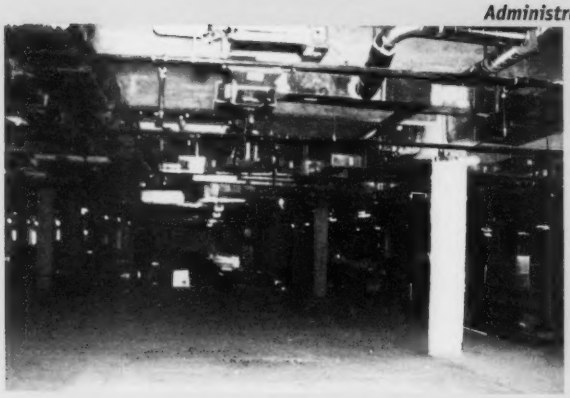
"Building 1 still effectively expresses an architectural character of impressiveness, dignity and strength, as well as reflecting the stability of the installation's medical values," Newbill said.



*When wall surfaces came down, evidence of past chapters in the hospital's storied history came to light. Few of the mysteries were solved, or even solvable. A fire that probably occurred scores of years ago (left) was found covered up instead of repaired. The facility basement, the "dungeon" (right), definitely looked the part, complete with low ceilings and damp masonry walls.*

BEFORE AFTER

*Administrative space*



*Medical library*

*Staircase*

Story by Dee A. Chandler and Todd Czarnecki

# The Art of Military Housing

The Navy and private-sector partners are building solid business relations while creating the new military family communities of the 21st century.

Can an old dog learn new tricks? There is a new way of doing business today among the armed services that involves building and maintaining military housing communities for thousands of military families. Each of the armed services refer to "privatization" by different names, with the Department of the Navy (DoN) using the term Public/Private Venture (PPV) for its program. With PPV, in short, the DoN seeks to partner with private sector companies for the purpose of providing high-quality, affordable, safe housing for military families.

In large part through PPV, the DoN intends to eliminate a big backlog of inadequate housing by 2007.

Authorization for current PPV projects, called the Military Housing Privatization Initiative (MHPI), was provided by Congress as part of the National Defense Authorization Act of 1996. At the time, the Department of Defense estimated a military housing shortfall of approximately 180,000 units nationwide and a need for the renovation and upgrade of an additional 190,000 units.

Under MHPI, DoN is able to leverage limited resources and take advantage of private-sector operating efficiencies. Private-sector fund sources, coupled with conveyance of existing government assets and other government investment to the partner company, fund the construction, replacement or renovation, as required, as well as the long term operations and maintenance of the family housing projects.

Meanwhile, military families are offered quality housing and utilities in fair exchange for payment of their Basic Allowance for Housing (BAH) as "rent." This mimics the standard situation in occupying government housing today, where the price to live in the unit is the forfeiture of the monthly BAH.

In the Naval Facilities Engineering Command (NAVFAC) at its Southwest Division office, officials are in the procurement stage of two PPV family housing projects for Southern California, one for the San Diego metropolitan area and one at the Marine Corps Base Camp Pendleton.

The initial phase of the San Diego project was awarded in August 2001. At the time, it was the largest PPV initiative between the military and private developers.

This partnership with Lincoln Property Company and Clark Realty Capital includes the privatization of 2,660 existing Navy-owned homes at 19 military housing areas. Additionally, 500 brand-new PPV homes are now being constructed at San Diego's former Naval Training Center, a housing area now called The Village at NTC.

Upfront construction activity includes the replacement of 812 existing units at San Diego's venerable Cabrillo Heights housing area with 900 new townhomes.

The Village at NTC showcases the DoN's successful partnership with the private sector — and the greater efficiency and cost effectiveness the partnership approach yields. The program's Colonial Spanish architectural style townhomes average 1,450 square feet in area, and they're arranged in building clusters of two to six units, each with rear, detached garages.

There is a range of floor plans for the 500 units, ranging from 2 bedroom/1.5 bath units to 3 bedroom/2.5 bath models, well comparable in size, scope and build-quality to commensurate housing units "on the economy," except that they are significantly more affordable for the typical military resident.

The new neighborhoods will include 7.2 acres of landscaped open areas, a central park and mini-parks, recreation facilities with sports courts, a swimming pool and gym, "tot lots" and a site for a preschool operation.

Approximately $260 million worth of construction is being performed, with the DoN's share under the provisions of PPV amounting to only $21 million. As noted by Tony Megliola, Navy Team Leader for NAVFAC Southwest Division, "by utilizing the MHPI authorities, the Department of the Navy is able to provide many services and amenities that otherwise could not be provided due to budget constraints."

Original Photo by Larry Nuzum/navfac swdiv

Marine Corps Base Camp Pendleton is a 125,000-acre base with approximately 6,700 housing units. The first phase of its PPV program, executed in November 2000, involved a partnership with Hunt Building Corporation that privatized 512 existing units in the De Luz family housing area. The project will provide 200 new townhomes, the razing and replacement of 312 residences and the renovation of 200 units.

The end product will be 712 new or renovated and upgraded housing units for Marines and their families. "The DeLuz PPV project has set the standard for quality of construction and quality of life amenities for future privatization that may be contemplated on the base," said Morgan Rogers, Marine Corps Team Leader for NAVFAC Southwest Division.

With the expansion of PPV projects throughout the U.S., NAVFAC announced the creation of a Center of Excellence for the Public Private Venture program. Its role is to assist NAVFACHQ and field commands in the documentation and dissemination of PPV best practices, lessons learned, process improvements, and to promote process and document consistency.

The evolution of Public/Private Venture is a cost-effective way to move the common military housing project into a modern era, but with improved build quality, enhanced services — and a big vote of approval from the military families who will occupy them.

In making the most of its PPV authority, the DoN fulfills the needs of Navy and Marine Corps families in both the short and long term with rejuvenated homes and additional new homes. They revitalize their military as well as civilian neighborhoods, alleviating shortages and providing services and amenities that create world-class communities. The financial and business aspects are a win-win for not only for military families, but also for taxpayer and the local business.

PPV is taking root as the DoN's new way of conducting its military housing business in the 21st century.

**The art of military housing is to transform a small Navy investment and lots of cooperation into a new, welcoming and attractive place for Navy & Marine Corps families to live.**

# The Hangar Gets Suspenders

Story and photos
by
Peter Beaudry
Susanne Grant
and
ENS
Shannon
Richardson

>> **During the wartime effort of World** War II, three temporary aircraft hangars were constructed at the Naval Air Station Brunswick, Maine. At the time, no one knew how long they would be needed — and by the same token, no one could have foretold how long the structures would remain in operation.

>> More than 50 years later, though, two of the "temporary" structures are still being used. The third was taken out of service in 2000.

>> One of the hangars still in operation, Hangar 1, was constructed with 26 trusses of California Douglas Fir that **spanned four aircraft bays. In the intervening years since the structure were** built, the wood has dried, connections have loosened, and the trusses haveundergone 58 years of cyclical loading and unloading due to the yearly snow and the wind loads.

>> The trusses were originally designed to accommodate a 40 psf live load. But according to recent structural studies, the trusses were only able to support a five to 10 psf live load. This equates to only three to six inches of snow — not a comfortable margin in Maine. The deterioration of the units' load-bearing capacity was due to creep, shrinkage, cracks and splits in the wood. In fact, a **large snowfall in 1993 caused a por-**

tion of Hangar 1's structural support system to fail. Luckily, no aircraft were damaged and no one was injured during this failure.

With the structural analysis in hand, Brunswick Public Works determined that truss repairs were necessary to maintain the structural integrity of the hangar. This would allow the two tenants, the "Minutemen" of Reserve Squadron VP-92 and "The Old Buzzards" of VPU-1, who operate P-3 Orion aircraft, to safely continue their maintenance operations. A task order under the BOS/JOC contract with J.A. Jones of Charlotte, N.C. was awarded to initiate the time-critical repairs before last winter's snowfall.

J.A. Jones recommended the installation of an exoskeleton structure on the roof of Hangar 1 that would tie into the existing trusses and support the inner building's roof, much like suspenders holding up a pair of pants. One of the earliest architectural examples of an exoskeleton structure is the Notre Dame cathedral in Paris, France, with its famous flying buttresses.

Contemporary examples are the *Centre Georges Pompidou*, also in Paris, with steel trusses spanning the width of the building, and the Hancock Tower in Chicago with its well-known exterior cross-bracing to stabilize the tower against wind loads. The Public Works/ROICC team accepted the Jones recommendation in March 2002 and a fast-track design and construction plan was quickly approved.

The exoskeleton structure consists of 24 steel trusses, each 12.5 feet tall, 120 feet long, and weighing 18,000 lbs each. The steel trusses span each hangar bay and share a common bearing point at the centerline of the hangar. Diagonal bracing interlaces the steel trusses. This forms a complete box truss system on the roof of the hangar, an area of 240 feet long by 300 feet wide. The steel trusses are supported by steel pedestals directly attached to the existing wooden columns, reinforced with additional diagonal bracing within the hangar bays. Lateral movement of the pedestals is allowed by a slip plate arrangement on the outside column lines.

**Steel tie-rods spaced every 17.5 feet connect the existing wooden trusses to the exoskeleton structure and are tensioned so that 75 percent of the wood trusses' dead load is transferred to the exoskeleton structure. One of the best features off this solution was that it could be implemented with minimal impact to essential aircraft maintenance operations inside the hangar.**

Cooperation among the ROICC-Brunswick office, the squadrons and the contractor was essential to ensuring minimum impact on critical work schedules. Aircraft maintenance work had to be continuously coordinated with the ongoing construction work and the ever-changing operational requirements of the wings. This coordination task, at times, was more challenging than the actual installation of the trusses. To the maximum extent practical, the goal was to maintain one maint bay per squadron for maintenance of P-3 airplanes.

In late September the trusses began arriving from South Carolina in 60-ft sections. J.A. Jones assembled the trusses on the ground by joining two sections using ASTM A490 bolts. The assembled trusses were stacked vertically in position for future crane placement. The project team, which included the regional safety office, finally determined it was prudent to vacate the hangar of all personnel during the final phase of actual truss placement. This safety-driven decision added complexity of the coordination effort.The original plans called for a crane to be placed at each of the four quadrants of the building. However, the team later determined that time could be saved by using a building centerline configuration with the crane located on north and south centerline projections of the building. This plan reduced the time required for crane disassembly, relocation and reassembly. Under this plan, the placement radius of the trusses in conjunction with their size and weight required a crane with a luffing boom configuration. The contractor used a 500-ton Demag rough-terrain crane furnished by Clark Rigging of Syracuse, N.Y., one of only a dozen in the entire country.

Just prior to crane operations for truss placement, an unforeseen condition arose that had the potential of bringing this project to a screeching halt: The ROICC didn't have enough funds to shore up the costs of the modifications. The truss project required immediate funding or the truss lift phase would be suspended. The financial need came to light after the start of the new fiscal year, and resolving it was further

complicated while the government operated under a continuing resolution.

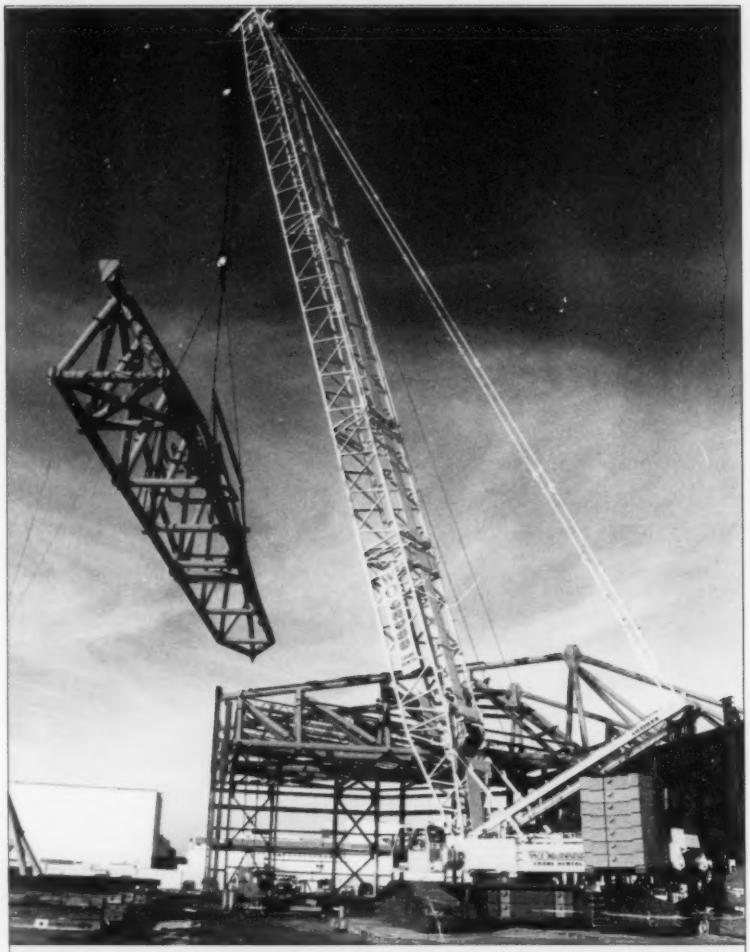
Meanwhile, somewhere over the horizon, the team could almost feel the snow clouds building.

Suspending the project at that point would have prevented the work from being completed before the onset of snowfall. Not unlike a spacecraft in orbit maneuvering for a critical docking procedure, much work had gone into coordinating a four to six-day window for the truss installation. If it was missed, recovering the opportunity would be difficult to impossible.

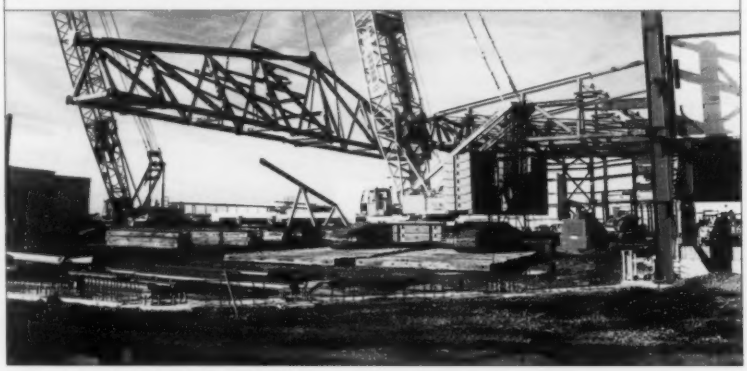
The lift procedure demanded wind speeds lower than 24 mph, hard to forecast in the impending winter with its higher gusts. The highly specialized 500-ton crane would be lost to work elsewhere if demobilized. Finally, the squadrons had hard operational requirements. All three of these essential elements — weather, crane availability and operational schedules — had to be in perfect sync for that critical four to six day period. Then the money had to get here.

With the technical assistance of NAVFAC's Engineering Field Activity Northeast, Navy Region Northeast was able to fully communicate the critical funding need to receptive authorities at the Atlantic Fleet. Working overtime, the Fleet reprioritized this 11th-hour budget requirement and sent the critical infusion of funding just before project managers would have had to deliver a suspension-of-work order to the contractor.

Through the outstanding team effort expressed by all those involved, the project moved forward and avoided an enormous negative impact to key operational Naval forces. The trusses were very successfully installed, the project concluded, winter came and went, and all was right with the world.



Crane operators and riggers from W.O. Grubb, Richmond, Va., lift a cantilevered roof truss during construction of an aircraft maintenance hangar being built in the SP Area of Naval Station Norfolk. Each of the five trusses in the hangar is 155 ft long, weighs 110,000 pounds and is made of steel pipes ranging in size from 12 to 18 inches in diameter. The trusses cantilever the entire length of the hangar bay, approximately 85 ft, support the entire roof of the hangar as well as interior cranes and other items. To ensure each piece would fit in the field, the fabricator, Banker Steel of Lynchburg, Va., completely assembled each truss in its shop and then took it apart prior to shipping. The $11.6 million project, designed by TranSystems Corp. of Norfolk, is being built by American Bridge Company of Williamsburg, Va. The hangar is scheduled for completion in the spring of 2003. U.S. Navy photos by John E. Peters



# *VANGATA DOBBIAMO!*

For 45 days last fall, and in often poor weather, ROICC Aviano could only say 'Dig we must.'

AVIANO, Italy — Coming off five grueling months of 13-15 hour days getting the $33 million Department of Defense school ready for the fall 2002 school year, the ROICC Aviano team took on $5 million worth of airfield pavement and airfield lighting — and delivered big by completing the all-weather job in fewer than 45 days.

"We faced a formidable task given the fact this work had to be completed during the rainy season, when the 31st Fighter Wing's two F-16 squadrons were deployed on expeditionary operations in Sardinia and Kuwait," said Lt. Cmdr. Scot Sanders, ROICC Project Engineer responsible for leading the construction effort.

"Getting this project completed on time was the only option. It was costing our Air Force client $1 million per day to keep the fighters deployed down range," Sanders added.

On Sept. 18, 2002, the last F-16 "Fighting Falcon" took off and the runway was officially closed for the scheduled 45-day period. The construction contractors, Kellogg Brown and Root, the Atlantic Division's CONCAP contractor, and local Italian contractor GEMMO Impianti, immediately went to work. The contractors worked 15-hour days, seven days a week, and battled through periods of adverse weather.

"It rained for the first five days of the project and we thought we were sunk," said Bobby Canady, supervisory construction representative who lead the quality assurance effort for the airfield paving portion of the project. "Fortunately, Joe Woliver from the Atlantic Division Geotechnical and Paving Branch was on the ground with us. We were able to add soil stabilization cement to the base course material and continue the work with minimal impact to the schedule."

After nearly 40,000 man-hours were expended to remove and replace 4,000 cubic meters of concrete pavement and 10,000 cubic meters of sub-grade to install 35 miles of electrical conduit and cable, all runway work was finished on Oct. 28 *four days ahead of schedule.* The first fighter aircraft elements from the 31st Fighter Wing touched down Oct. 29.

"An impressive performance, from start to finish!" said Lt. Col. Mike Morris of 31st Fighter Wing's Mission Support Group.

*— Mike Bellamy, P. E.*
*Chief Engineer, ROICC Aviano*

*In any undertaking of this magnitude, the ability to achieve this measure success is a collective result with efforts by many people. Atlantic Division employees who contributed to the successful completion of this project included:*

Lt. Cmdr. Scot Sanders
Project Engineer
Joseph Panigutti
General Construction Representative
Bobby Canady
Supervisory Construction Representative
Laurette Brunner
CONCAP Contracting Officer
John Henry Green
Electrical Construction Representative
Daryl Bryant
Geotechnical and Paving Branch
Karen Carney
Contracting Officer
Joe Woliver
Geotechnical and Paving Branch
Horace Miller
Electrical Designer

# SCENES FROM A BALL 2003

*This year, the world itself was the stage for the celebration of NAVFAC, CEC and Seabee birthdays*

**All over the world** in 2003, celebrants gathered to observe the 161st anniversary of the Naval Facilities Engineering Command (NAVFAC), the 136th anniversary of the Civil Engineer Corps and the 61st birthday of the Seabees.

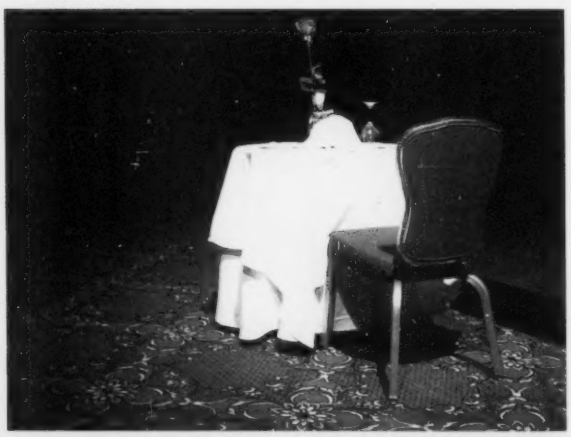
Hosted by Rear Adm. Michael R. Johnson, Chief of Civil Engineers and Commander, NAVFAC, and his wife, Terry Johnson, the headquarters celebration was held March 15 in the Marriott Crystal Gateway in Crystal City, the familiar node of hotels and office complexes only walking distance from the Pentagon in Arlington, Va.

More than 650 attendees included Seabees, CEC officers and other service members, veterans and retirees from most of the eastern seaboard. Special guests included Acting Secretary of the Navy the Hon. H.T. Johnson, and special guest speaker, the Vice Chief of Naval Operations Adm. William J. Fallon.

Led by Commanding Officer Lt. Cmdr. Dale Uyeda, Construction Battalion Maintenance Unit 202 from Naval Submarine Base New London on Groton, Conn., hosted its well-attended Seabee Ball at the Mystic Marriott March 1. The event's special guest was Rear Adm. Michael C. Tracy, Commander, Navy Region Northeast and Commander, Submarine Group 2.

*Below, RADM Johnson (left), VCNO ADM Fallon and Master Chief Petty Officer of the Seabees Harrell T. Richardson enjoy a moment after the VCNO is awarded an Honorary Seabee certificate. Bottom, the U.S. Marine Corps Band quite literally rocked the house for a thrilled audience.*

*The headquarters anniversary ball featured a number of traditional and unique touches. The traditional "M.I.A." table, a special remembrance (below), was set with extra care. After a brief reception period, the dinner call was sounded by a bagpiper in full regalia (bottom, left). Not to be outdone in terms of pure lung power, a horn player from the U.S. Marine Corps Band (bottom, right) can definitely carry a tune.*



U.S. NAVY PHOTOS BY LCDR SEAN KELLY & JOC DANIEL CHARLES ROSS IN ARLINGTON FOR NAVFAC. NICOLE HAWLEY IN MYSTIC FOR NEW LONDON; AND PH2 JACOB A. JOHNSON IN KUWAIT FOR 1MEF MEG

Naval Mobile Construction Battalions 5, 74 and 133, Naval Mobile Construction Force Support Unit 2, the Twenty Second Naval Construction Regiment (22NCR) and staff members of the 1st Marine Expeditionary Force Engineer Group gathered at Kuwait's Camp Moreell March 1 to mark the three-way birthdays.

The host of the desert event was Rear Adm. Charles R. Kubic, Commander, First Naval Construction Division and Commander, 1st Marine Expeditionary Force (MEF) Engineer Group, joined by Capt. William McKerall, Commander, 22NCR. The event's special guest was U.S. Marine Corps Lt. Gen. James Conway, Commander of the 1st MEF.

The Seabees are deployed in the Gulf region to provide construction support to the 1st MEF and Central Command operations, including *Operation Iraqi Freedom*.

Rear Adm. Kubic reminded the Seabees that they were celebrating their birthday in much the same way Seabees did the first year they were formed — in harm's way — when they provided contingency construction support to U.S. Marines during the battle of Guadalcanal. He encouraged the Bees to continue with the same valor as their predecessors, and turning to Lt. Gen. Conway, RADM Kubic said, "The Seabees never left you — and we never will."

***Probably nowhere on the planet was the anniversary season celebrated with greater fervor than in the desert sand at Camp Moreell, Kuwait, hosted by RADM Charles R. Kubic (top, left) and featuring USMC LtGen James Conway (top, right), a traditional color guard and the bowed heads of an invocation. Seabees rendered honors (bottom, right) during the ceremony. At SUBASE New London, CBMU 202's LCDR Dale Uyeda (below, middle) hosted guest RDML Michael C. Tracy, base commander. No one has more fun at a Seabee Ball than Seabees (below, left), such as UT1 William Wyld and his wife Hadden.***

# This School is a Blast

There are wild extremes of weather, from picture-postcard lakeside idylls to cold mountain vistas. But students learn a lot about one of the most specialized jobs in the Navy.

And then they get to blow stuff up.

STORY BY STEVE MCCOMBS, EOCS(SCW) ART MESSER & EOC(SCW) TOM KUNTZ
PHOTOGRAPHS BY EOC(SCW) TIMOTHY "DZ" DZIERGAS & EO1(SCW) PHIL CUZZETTO

FROM THE ANCIENT ARMIES OF THE Great Byzantine Empire and Roman Legions to modern military forces in the Middle East, there are a couple of elements that make many armies in history successful — water, and rock.

Water, because huge combat forces require water to sustain them, and rock, so that roads, highways, airfields, port facilities and foundations for camps can be built to support fighting forces. The mission of the Naval Construction Force takes Seabees all over the world. Oftentimes, Civil Engineer officers and the Seabees must rely on acquiring building materials from the local area to complete mission tasking.

See what we mean? Water and rock.

In the high desert hills above the Naval Air War fare Center (NAWS) in China Lake, Calif., a group of Seabees train the Navy combat engineers in the fields of Water Well Drilling and Blasting and Quarry Operations. NAWS China Lake is home for the Naval Construction Training Unit and the military professionals dedicated to providing a world-class education in how to get water out of the ground, and "making little rocks out of big rocks." Senior Chief Equipment Operator (SCW) Douglas Hunt is the officer in charge of the unique Navy school unit.

For those who have never been to the high desert, China Lake can be a study in contrasts, especially in the summer months when the temperatures often exceed 115 degrees and everyone carries water to avoid dehydration and heat stress.

During the few winter months, China Lake gets cold, often hitting temperatures down to 10 degrees. Winds come off the nearby Sierra Nevada Mountains and whip through the area, adding wind chill to an already frosty environment. And when you consider the desert is home to a variety of unsavory creatures, such as rattlesnakes and scorpions, it's no place for the timid or tender of foot.

Water Well Drilling training is ideally suited to the high desert because of the varied geologic formations. Water Well classes drill between two and three wells in a six-week course. One well may be in an ancient lakebed at a depth of 300 feet and the next well may be in a confining layer of granite or volcanic basalt where the depth could go as deep as 1500 feet. Drillers are challenged with learning how to bore through various strata to different depths.

Water Well drilling is a remarkably refined art that requires an ability to interpret geologic data and identify water-bearing formations through surface indications. Using the latest technology and equipment to drill the water well, Chief Equipment Operator (SCW) James Jones, Equipment Operator 1st Class (SCW) John Romero and Construction Mechanic 2nd Class (SCW) Caleb Painter lead the NCTU Water Well Team.

You say you need several tons of granite blown out of the side of a mountain? "Can do, sir!" This is where the Blasting and Quarry crew, led by Chief Equipment Operator (SCW) Timothy "DZ" Dziergas steps in to teach Seabees.

As lead blasting and quarry instructor, EOC Dziergas and a select few experts, such as Equipment Operator 1st Class (SCW) Phil Cuzzetto and Construction Mechanic 1st Class (SCW) Lewis Lovos, provide classroom training, teaching the basic theories of soil mechanics, rock drilling and explosives. Once the students have passed a strict series of examinations, it's off to the quarry site for hands-on operations.

When an area of rock is chosen for demolition, an exacting process takes place. The weight and composition of the soil is calculated and the blasters decide where they may want to "move" it. Holes are drilled to a specific depth and placement into the rock. It's quite an operation to watch as the drillers gracefully operate heavy equipment up on a rock ledge.

As the holes are drilled, they are capped to prevent any debris from entering and interfering with the explosion. Then all the charges are set in place.

Some blasts, called "shots," are done with plastic explosives. At other times, the shot might call for an Ammonium Nitrate and Fuel Oil (ANFO) mixture. Each method and related tasks is a precise and rigorous process, with each hole containing a precisely pre-determined amount of the correct explosive.

Safety is the top priority with this training. Rigid Operational Risk Management (ORM) is performed at every level of the operation with no room for short cuts. Safety procedures and pre-mishap plans are briefed, and the use of appropriate personnel protective equipment is strictly enforced. Only authorized personnel are allowed in the blasting area and every conceivable precaution is taken. When every safety requirement is checked and double-checked, the blasters are ready to fire.

Non-essential personnel are mustered at a safe distance away from the blast zone. Only a select few personnel are allowed in the bunker, a steel container covered with sandbags.

The lead blaster for the shot makes one final check of the area and proceeds to the bunker. A siren wails and a countdown begins.

"Fifteen, fourteen ... three, two, one — *fire the shot*."

In a moment, several tons of rock and soil erupt into the air. When the dust clears, there is a neat, clean pile of debris in the exact location the blasters wanted.

Once the area is given a final clearance, the front-end loaders can move in and haul off the rock. It is a truly awesome demonstration and, for many observers, one of the most motivating experiences going.

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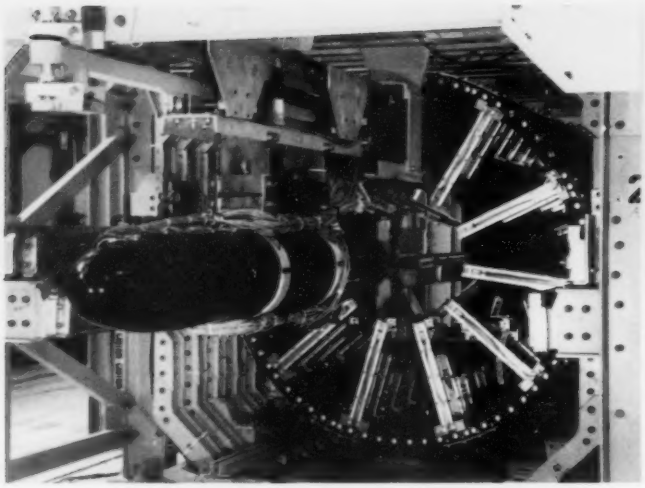


# *Magnetic Fields Lab Opens*

STORY BY LESLIE SPAULDING AND TOM WARRING

PHOTOGRAPHS BY PAM LAMA

Naval Surface Warfare Center Carderock Division (NSWCCD) dedicated a Magnetic Fields Laboratory on Oct. 7, 2002 at its main site in West Bethesda, Md. This facility replaces the Navy's previous magnetic silencing labs at the Naval Ordnance Laboratory White Oak in Silver Spring, Md., and Carderock Division's Annapolis Detachment, Annapolis.

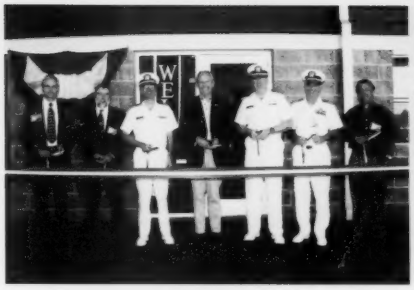
The $7.6 million complex totals 39,000 square feet and houses unique facilities for measuring magnetic fields of scaled surface ship and submarine ferromagnetic models and full-scale shipboard equipment. The Navy uses such facilities reducing the susceptibility of ships and submarines to magnetic sea mines and magnetic detection systems. Accomplishing this demands comprehending the underlying physics and testing with physical models. The payoff for the Navy is affordable, effective systems with minimized costs associated with full-scale testing.

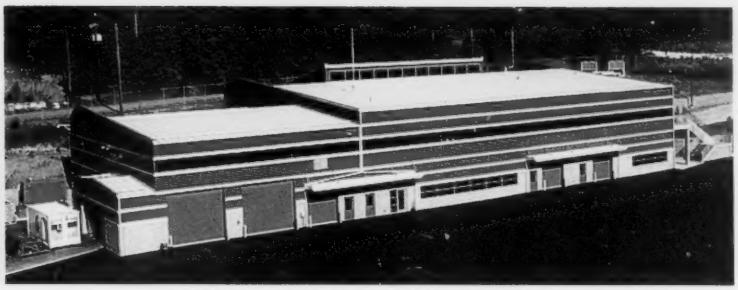
The complex incorporates an Electromagnetic Signature Facility, Deperming and Assembly Laboratory, Background Sensor Laboratory, and Magnetic Fields Laboratory. The latter is unique, a facility simulating ambient magnetic conditions a ship will encounter anywhere on Earth — the only U.S. laboratory allowing accurate measurement of magnetic fields underneath of full-size operating equipment and magnetic scale physical models.

The Magnetic Silencing Complex provides 21st Century laboratories and offices for the magnetic silencing groups consolidated from other closed facilities. Combining and rebuilding those assets generate a coupling of resources and talent that create a powerful nexus in sensor technology, design, development and testing of signature control system for Navy submarines and ships. The Signatures Directorate, under the leadership of Gary Jebsen, operates this Navy Center of Excellence, ensuring Navy vessels maintain a significant advantage over adversaries.

Magnetic silencing first became important during World War II, when the Allies discovered that Hitler's Navy posed an increased mine threat. The Earth's magnetic field corresponds roughly to that of a very large magnet near its center, orientated north-south. Its magnitude at the Earth's surface is roughly half a gauss or 0.4 ampere turns per centimeter. Any mass of iron stressed in the Earth's magnetic field becomes a magnet.

A ship during construction accumulates a sizable magnetization, which then changes gradually, depending on its heading and location, when the ship is under way. Before WWII the Germans had developed sensors capable of detecting a ship's field and detonating a charge close enough to the hull to cause major damage. This development prompted the U.S. and the U.K. to develop countermeasures for mines triggered by magnetic fields — and a new field of technology openeed.





# GY GETS TWO NEW HOMES

## *Acoustic Test & Analysis Center Debuts*

STORY BY TOM WARRING
PHOTOGRAPHS BY PAM LAMA

The Navy's Acoustic Research Detachment (ARD) conducted a ribbon cutting August 13, 2002 for the 26,000-sq ft Acoustic Test and Analysis Center (ATAC).

Capt. Steven W. Petri, USN, Commander, Carderock Division, parent organization of ARD, welcomed Idaho Senator Larry Craig as the special guest speaker.

The senator remarked that the facility enhances the Navy's capabilities in designing submarines.

"It means that we're constantly investing in modern equipment to build the very best submarine in the world." Senator Craig said.

The $7.7-million ATAC project was designed and built by WPC, Inc., of Gig Harbor, Wash., under the direction of the NAVFAC Engineering Field Activity Northwest. ATAC is the centerpiece of a major construction plan, consolidating ARD offices, computer laboratories and industrial facilities into a single, modern facility.

The project represents the culmination of the ARD's Facility Master Plan, which is transforming ARD from a collection of converted World War II-vintage boat repair shops and 1970-era buildings into a state-of-the-art test facility.

The new ATAC structure is a multifunction building, consolidating 80 percent of the primarily civilian government employee workforce. It houses the capability for analysis of acoustic data from large-scale model lake tests.

ATAC boasts an approximately 9,000 square-foot secure laboratory for analysis of model data, with fabrication shops for metal, fiberglass, wood and repair of boats, motors and equipment, plus offices and conference rooms for resident and visiting engineers and analysts, engineers and the detachment managers. Two rooms allow video teleconferences.

The sophisticated ARD employs state-of-the-art facilities to test technological innovations improving submarine signature as well as certain hydrodynamic characteristics.

ARD is often the last stop in the research process prior to full-scale acquisition decisions.

The ARD is located on the site of the former Farragut Naval Training Center. On October 31, 1946, the Secretary of the Navy established a shore installation at Bayview called the David W. Taylor Model Basin Field Station.

Today the Model Basin is known as the Carderock Division, Naval Surface Warfare Center, Naval Sea Systems Command.

The earliest experiments at ARD evaluated acoustic countermeasures. Up to 1965, the Navy conducted a variety of acoustic experiments, including surface ship sonar calibration, acoustic and radar countermeasures evaluation, towed array tests and acoustic measurement on small, freely rising buoyant shapes.

ARD operates under the cognizance of the Carderock Division's Signatures Directorate, with the mission of ensuring the U.S. Navy maintains a powerful advantage in a dangerous world.

DEPARTMENT OF THE NAVY

NCE: Navy Civil Engineer
Naval Facilities Engineering Command
Public Affairs Office (Code PA)
1322 Patterson Ave SE Suite 1000
Washington Navy Yard DC 20374-5065

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